SCIENCE UPDATE 2020

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1. Summary

1.1 This paper gives an annual update on FSA's science, including:

a) A review of the work undertaken since the last update[1]
b) A summary of ongoing and planned future activities
c) Our science response to Covid-19

1.2 Whilst our science update includes aspects related to social science, more detail on those specific aspects of our science portfolio will be covered in a separate report later in 2020.

1.3 The Board is asked to:

- review the progress made in developing the FSA's science capability and capacity; and
- comment on future priorities and direction.

2. Introduction

2.1 Science is integral to the work of the FSA and we continue to put science at the heart of everything we do to ensure that the decisions made by the organisation are informed by robust evidence, ensuring that the FSA remains a science driven organisation.

2.2 This annual update to the Business Committee sets out the progress made in improving the FSA's science capability and capacity and discusses the potential future trends and priorities.

2.3 Whilst this paper provides an overview of science activities within the FSA, it should be considered alongside other relevant science updates delivered throughout the year, including but not limited to:

a) the annual update on social science in the FSA[2]
b) the annual report from the Science Council[3]

[1] https://www.food.gov.uk/sites/default/files/media/document/fsa-19-09-19-science-update-2019-final_0.pdf
[2] https://www.food.gov.uk/sites/default/files/media/document/fsa-20-01-13-annual-update-on-social-science-in-the-fsa-building-capacity-and-supporting-delivery_0.pdf
[3] https://www.food.gov.uk/sites/default/files/media/document/fsa-20-03-07-science-council-chairs-annual-report-19-20-final.pdf

c) the report on the economic burden of foodborne disease in the UK[4]
d) the update from FSA's Chief Scientific Adviser[5]
e) others mentioned in this report which provide details on specific aspects of our portfolio.

3. Past Activities

3.1 In 2019 we presented a four-part strategic plan for the next three years and proposed future priorities which would continue to improve the FSA's approach to the acquisition and use of science[6]. This plan ensures that we are utilising our resources most effectively and placing science at the heart of the FSA.

3.2 We continue to progress along the trajectory outlined in 2019 and the FSA science capability and capacity went from strength to strength. More details are contained in the Annex, but some key facts are as follows:

a) Investment in the FSA's science capability and capacity is good with 94 FTE posts existing within SERD in summer 2020 (up marginally on the 91 FTE posts from early 2019).
b) While Covid-19 did impact our ability to deliver the planned research programme, we made a notable investment in science and evidence to advance FSA priorities.
c) Horizon scanning capability was increased and tested to address Covid-19 challenges[7].
d) We published the FSA Areas of Research Interest outlining our research priorities in order to enhance collaboration.
e) We delivered a suite of Food for Thought seminars to increase the communication and engagement on a range of food system related science topics across the FSA. This included a successful move to virtual seminars when staff were required to work from home (and an increase in numbers of seminars during this period as a result).
f) We ran 2 internal science communications campaigns ("September of science" and "5-days of science", the latter of which to correspond to the start of the new CSA), which increased the awareness of science across the FSA – both what science is and how it can support the work of others.
g) We published many scientific reports including a major series of studies focused on foodborne disease in the UK including the final NoVAS report assessing the contribution made by the food chain to the burden of UK-acquired norovirus infection, an updated estimate of foodborne disease in the UK and the development of a cost of illness model to assess the burden of foodborne disease in the UK.

[4] https://www.food.gov.uk/sites/default/files/media/document/fsa-20-03-09-the-burden-of-foodborne-disease-final.pdf
[5] https://www.food.gov.uk/sites/default/files/media/document/fsa-20-06-06-annual-science-update-from-fsas-chief-scientific-adviser.pdf
[6] https://www.food.gov.uk/sites/default/files/media/document/fsa-19-09-19-science-update-2019-final_0.pdf
[7] https://www.food.gov.uk/sites/default/files/media/document/fsa-20-08-06-annual-horizon-scanning.pdf

h) We ran a further recruitment campaign for the FSA's Science Council and Science Advisory Committees (SACs) resulting in the appointment of 11 new members. Alongside the recruitment, a major refresh and rebranding of the SAC websites was undertaken (relaunched in August 2020).

4. Ongoing and Future Work

4.1 The FSA continues to embed science in all that we do, and the work of the Science, Evidence and Research Division (SERD) has helped to facilitate this.

4.2 Our ongoing and future activities are aligned to the priorities presented in 2019 and shown in the annex to this report (Figure 1) to build science capacity and capability of science in the FSA and ensure our science has impact both in the FSA and beyond.

4.3 Our activities continue to build on the successful efforts to date and enable us to further develop the science and evidence within the FSA. This will continue to ensure our decisions are informed by robust science and can be trusted. It also aligns with wider government goal to further strengthen science, research and innovation across the UK, making it central to tackling the major challenges we face including those associated with Covid-19[8].

Making Risk Analysis Work

4.4 We have successfully created a new risk assessment capability, as part of the FSA's new Risk Analysis Process, designed to replace those functions currently provided by EFSA. This process has been discussed with the Science Council and Science Advisory Committees and presented by the CSA at the Board meeting in June 2020[9]. Whilst we now have the core capabilities and processes in place, our future focus is on ensuring these are fully effective 'when used in anger' and that we have sufficient capacity to deliver the demands that will be placed on us. As part of CSR20, we will be placing particular focus on the regulated products area; working with policy colleagues, to understand different scenarios and thus help us build realistic resourcing models.

Building Science Excellence

4.5 In addition to increasing capacity, we continue to invest in the capability of FSA staff and ensure they are given the opportunity to develop in role. In 2019, and the beginning of 2020, we engaged in cross-government activities, such as those being led by the Government Science and Engineering profession and we have identified specific workstreams to further develop this engagement and staff capability in the future. This will ensure the FSA remains a leading employer for those working in science related fields and continues to attract the best candidates to new roles and retain the strong staff base which we already have.

[8] UK Research and Development Roadmap (https://www.gov.uk/government/publications/uk-research-and-development-roadmap)
[9] https://www.food.gov.uk/sites/default/files/media/document/csa-report-risk-analysis.pdf

4.6 The Science Council and Science Advisory Committees continue to provide a key role in the assurance of science within the FSA. We ensure these are suitably supported and have established a SAC administration hub, aligned with the Science Council secretariat to ensure that there is good communication between the committees and lessons can be shared.

4.7 In response to recommendations of working group 3 of the Science Council[10], in 2019 we have established an effective Horizon scanning capability and continue to build on this and use it to identify current and future needs to ensure the FSA is a proactive, rather than reactive, organisation.

4.8 Working Group 5 of the Science Council was established in response to a request from the Board to the Science Council to conduct a review of the science and evidence base for addressing food hypersensitivity, advise on future research priorities and the role the FSA should play in enhancing scientific knowledge. This review ensures that the food hypersensitivity research programme is driven by science excellence and we will be using the lessons learned from the review to ensure continuous improvement across all FSA research programmes. Full detail on progress of the working group are contained in a separate update to the Board[11].

4.9 Through the Science Council and Science Advisory Committees we are also advancing work on ensuring science impact and increasing our external influence.

Growing our influence and impact

4.10 Whilst the FSA continues to deliver ground-breaking science, both on its own and in partnership, we are not a research institution and we need to ensure all the science we engage in has impact and its value can be realised. This means that the outputs need to be aligned with organisational priorities, effectively communicated and the results implemented to ensure we are delivering the best value for money.

4.11 The publication of the ARIs was the first step in the process of establishing Research and Evidence Programmes. These will be 11 interdisciplinary research programmes driven by the needs of the organisation and will enable enhanced external collaboration in order to provide the most value for money for FSA spend on science. In addition, the processes being developed surrounding the research programme will be a method by which to ensure science is having impact and the value of research can be realised. This work is in response to, and has been influenced by, comments from the Science Council and Science Advisory Committees.

4.12 One of the key delivery mechanisms for these research programmes will be the Strategic Evidence Fund (SEF) which was established in 2017 to help the FSA

[10] https://science-council.food.gov.uk/sites/default/files/fsascwg3finalreport.pdf
[11] https://www.food.gov.uk/about-us/fsa-board-meeting-september-2020

CSA steer strategic science and build the agency's future science capability. The fund is governed by the SEF Board, with the aid of a dedicated SEF programme manager. 2019 saw a refresh of the governance and assurance of the fund, drawing on recommendation from Working Group 1 of the Science Council[12], and as a result the fund has been used to increase our influence and impact by funding collaborative projects including fellowships with research organisations that we previously had little engagement with increasing our network and expertise available to us. We will continue to grow SEF year on year to increase its impact and use it as a tool to increase our external influence.

4.13 Since 2019, we have been expanding our external engagement in-line with recommendations from the Science Council and internal aspirations and we intend to continue this expansion. This includes building a more strategic relationship with UKRI, in particular the BBSRC. Through this, we have now built a consortium of funders including the FSA, FSS, BBSRC and ESRC, who have submitted an early stage expression of interest for a new Strategic Priority Fund (SPF) focused on food safety. If successful, this co-funded initiative would look to invest £20M in strategic food safety research and capability building, creating much greater benefits for food safety than we could achieve if we were funding this research without collaboration. Even if the full bid does not progress, the building of the new consortium has created opportunities for more focused research activities e.g. a new Food Safety Research network or participation in SPFs, with a broader remit e.g. agri-food biosecurity.

4.14 There will be a continued push in 2020 and beyond to improve communication to ensure those within the FSA that are not involved in science delivery are aware of the broad remit of research that is underway. This will include continuing and enhancing our Food for Thought seminars which also upskill staff in wider scientific issues related to the food system beyond those being led by the FSA.

Prepared for the future

4.15 In 2019 the Science Council made recommendations that the FSA should develop an enhanced and more systematic horizon scanning function as. Horizon scanning has been, and will continue to be, a major ongoing science workstream. More details on this were contained in the stand-alone paper presented to the Board in August 2020.

4.16 To be an effective, modern regulator, the FSA requires an effective surveillance programme to identify risks within the food system and target these in an efficient and timely manner, thus protecting consumers but also having minimal impact compliant businesses. In recent years, the FSA has seen a significant shift in both the volume and type of surveillance activities it carries out.

4.17 To address this challenge we will integrate current surveillance efforts into a coherent multi-faceted programme (which will not only work across the FSA but also build partnerships with other government departments in this space); fill

[12] https://www.food.gov.uk/sites/default/files/media/document/fsa-18-12-09-sc-wg1-capability-assurance-final_0.pdf

gaps in national food testing capability (including building longer-term technical expertise to support food safety/authenticity research and testing capability); and facilitate the routine deployment of disruptive technologies, such as whole genome sequencing, sensor technology and advanced data analytics.

4.18 In order to achieve these goals, we are proposing the creation of a new national Food Surveillance & National Capability Fund (FSNCF). Initially this will be a three-year programme covering CSR 2021-24 and will build on recommendations made in the NAO report and also internal papers approved by the FSA Board including the Sampling Strategy[13], Official Control Laboratories review[14] and the Science Council's horizon scanning report[15].

4.19 Should it be approved, it would amount to approximately £9M over the three-year period and include the establishment of 10 new posts which would further increase our capabilities around horizon scanning and insights, enhance coordination and collaboration across the food system and ensure we are prepared for the future.

5. Our response to Covid-19

5.1 We cannot overlook the impact of Covid-19, and as has been shown by wider government, scientific input is essential to an effective response to the crisis. We are using all aspects of our science capability to ensure a suitable response. Our work in this area includes enhancing our sampling and surveillance, improving our horizon scanning and activities associated with risk assessment.

5.2 Laboratory testing is a front-line service that is critical to national sampling and surveillance programmes and the number of official laboratories for food and feed has been declining and this has increased concerns about the resilience of UK laboratory network[16]. Early in the Covid-19 pandemic, it was estimated that the total amount of samples undertaken by official labs (OCLs) had reduced by around 70%. This increased concerns about the long-term viability of the laboratories, at a time when the national need is likely to increase in the medium-to-long-term, in order to meet extra demand for import sampling and testing following the EU transition period. At the same time, the pandemic put stress on the global food supply chain with indications that this could increase food fraud; creating a risk to consumer safety and impacting on trust. The FSA has responded to this challenge by developing a short-term sampling programme targeted at food risks associated with supply chain disruption during the Covid-19 outbreak and funding a method validation/knowledge exchange programme to develop capability. Sampling began in July 2020 and will continue until December 2020 with a final report due in March 2021. This programme will provide intelligence on the current issues and also act as a pilot for how we might deliver a more strategic targeted sampling programme in the future.

[13] https://www.food.gov.uk/sites/default/files/media/document/fsa-19-06-09-fsa-sampling-strategy.pdf
[14] https://www.food.gov.uk/sites/default/files/media/document/fsa-19-09-06-lab-review.pdf
[15] https://science-council.food.gov.uk/sites/default/files/fsascwg3finalreport.pdf
[16] https://www.food.gov.uk/sites/default/files/media/document/fsa-19-09-06-lab-review.pdf

5.3 We had already developed horizon scanning capability prior to the Covid-19 outbreak which meant that we were able to deploy this new capability to understand the potential impacts of the outbreak on the food system. The systems and tools we developed at the start of the pandemic continue to be used to inform both the FSA response to Covid-19 but also to ensure we are better prepared for the future.

5.4 Led by colleagues in the Risk Assessment Unit, the FSA produced a full and comprehensive risk assessment characterising the risks associated within the transmission of Covid-19 on food and food packaging. It also delivered a number of other, more focused Covid-19 food-related risk assessments e.g. risk to shellfish from wastewater. These risk assessments were central to the FSA and wider government's Covid-19 advice to businesses and individuals. They were also shared internationally, as part of efforts to achieve international consensus on food-related risks, keeping the FSA science at the leading edge internationally.

6. Conclusions

6.1 The Board is asked to:

- **review the progress made in developing the FSA's science capability and capacity; and**
- **comment on future priorities and direction.**

ANNEX

As outlined in the science report for 2019, SERD developed a four-part strategic plan for the next three years and proposed future priorities which would continue to improve the FSA's approach to the acquisition and use of science. This continues to be the framework for FSA science and is shown in Figure 1.

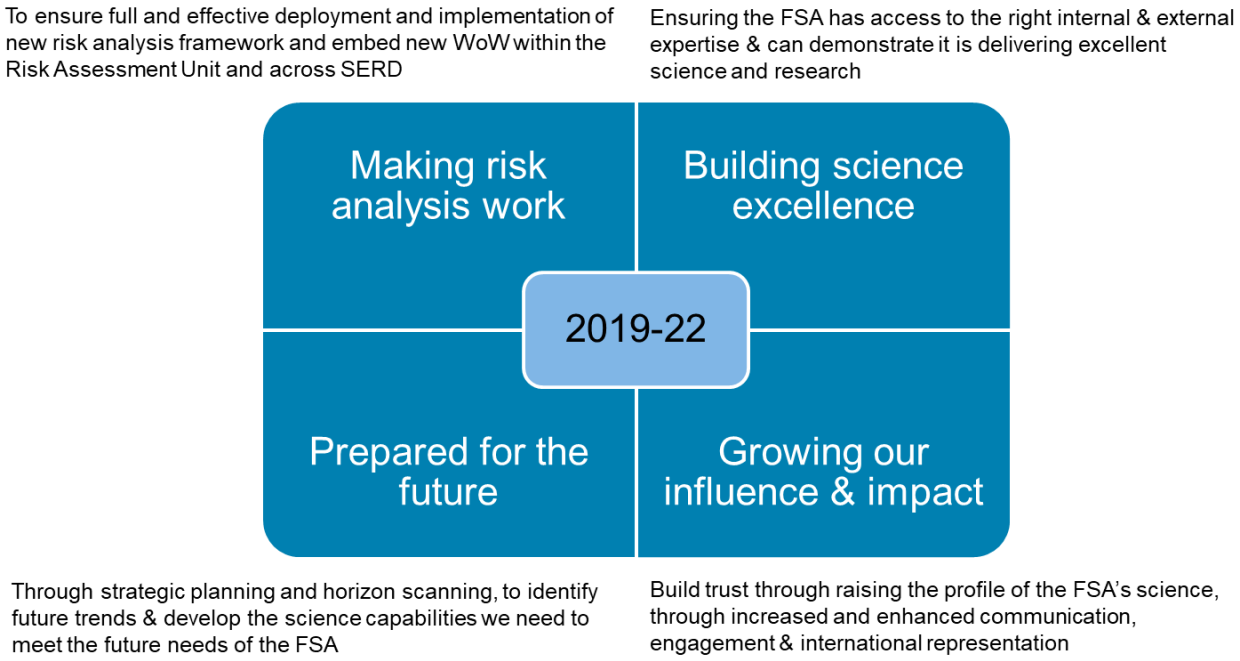

Figure 1 The four science four priority areas for 2019-2020.

Overall the total spending for science, evidence and research in FSA in 2019/20 increased to £12.7 million compared to £10 million in 2018/19. This increase has kept track with the increase in FSA's overall budget in preparation for EU Exit with science spending accounting for 11.3% of Annual FSA Net Expenditure which is beginning to address the steady decrease in the proportion of science spend over the last few years (Figure 2).

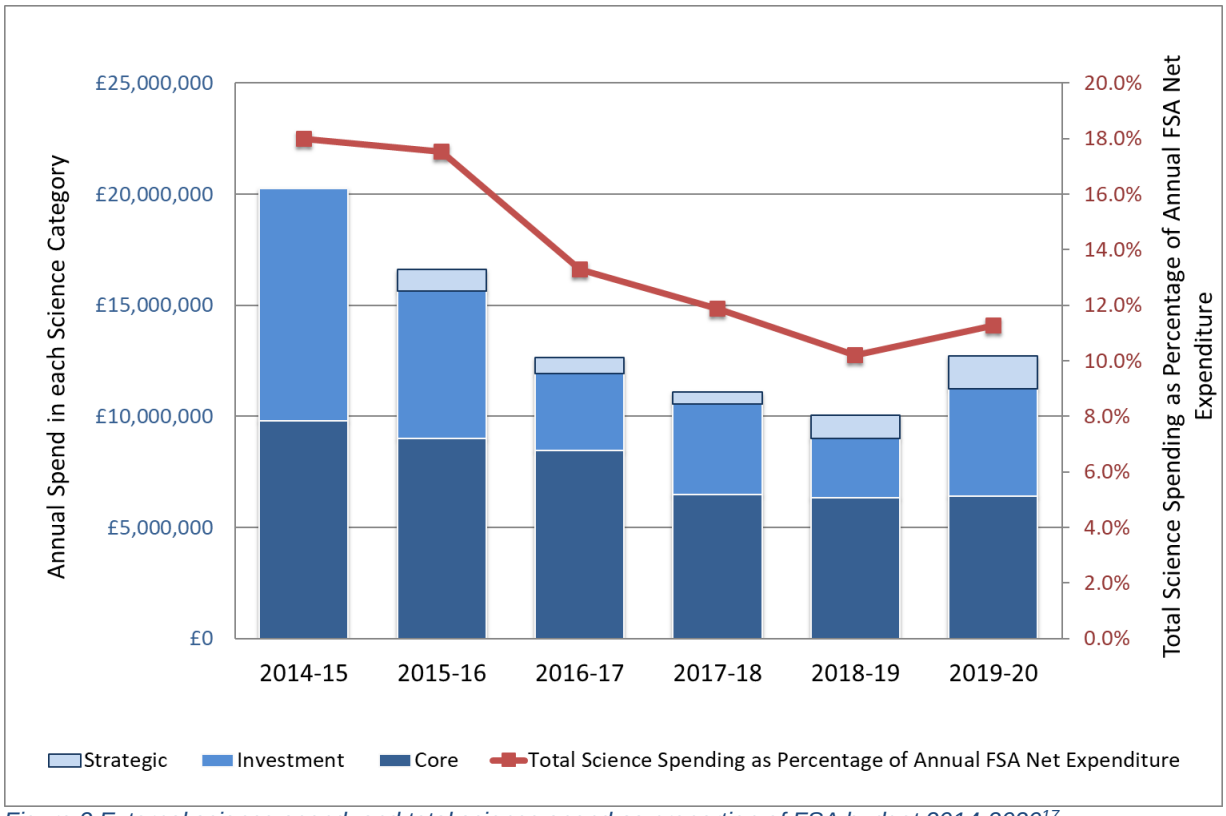

Figure 2 External science spend, and total science spend as proportion of FSA budget 2014-2020[17]

The key drivers and trends behind this increase, each linked to EU Exit readiness, were:

- the increased capability and capacity of the FSA's Scientific Advisory Committees and their supporting Secretariats;
- increased investment and capability to improve the FSA's strategic

In addition to its wider impacts, Covid-19 has meant that many projects that were initiated, or planned, prior to the outbreak were delayed and there was less ability to start new work. Therefore, whilst some areas have received additional funding as a result (eg Covid-19 Horizon scanning and sampling related activity), it is expected that total Science spend may be lower in 2020/21 although this level is currently hard to predict as it is driven by external factors such as the extent of the current, or future, lockdown.

All FSA research is available online[18], however, some key publications since the last science report include:

[17] Science spend is categorised as core, investment or strategic, as follows:

- **Core:** Science capability vital to support FSA response activities including statutory monitoring, scientific surveys and provisions to National Reference Laboratories.
- **Investment:** Prepares and informs the FSA's thinking and delivery including the FSA's Scientific Advisory Committees and surveillance.
- **Strategic:** The development of research partnerships, prediction of long-term trends, and trialling of new technologies including the Strategic Evidence Fund, cross-cutting research programmes delivered with external stakeholders and horizon scanning.

[18] https://www.food.gov.uk/search/research

- A rapid review of ‘moments of change’ and food-related behaviours
- A report comparing the methodologies used to estimate foodborne disease in the UK to those used in other countries
- A review of social science
- A qualitative risk assessment on the risk of food or food contact materials as a transmission route for SARS-CoV-2
- An investigation on the effect of extrinsic factors on food allergy
- A study on the consumer attitudes towards emerging technologies
- A quantitative risk assessment of foodborne norovirus transmission
- A consumer research report on cannabidiol (CBD) extracts
- A review of bio-based materials for use in food contact applications
- The Norovirus Attribution Study (NoVAS): Assessing the contribution made by the food chain to the burden of UK-acquired norovirus infection
- The development of a Cost of Illness (COI) model to assess the burden of foodborne disease in the UK